DOCUMENT RESUME

ED 217 191 CE 032 680

AUTHOR Stalker, Janet
TITLE The Relationship of Global, Reading, Vocabulary, and Cloze Tests to Student Success and the Effect of a Study Skills Program on Indices of Success for Vocational Students.
PUB DATE Feb 82
NOTE 32p.; A practicum paper presented to Nova University.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Analysis of Variance; *Auto Mechanics; *Cloze Procedure; Community Colleges; Correlation; Educational Testing; *Predictive Measurement; Predictive Validity; Predictor Variables; *Reading Tests; Research Methodology; *Study Skills; Test Interpretation; Test Results; Test Use; Test Validity; Two Year Colleges; Vocabulary; *Vocational Education
IDENTIFIERS Keewatin Community College MB

ABSTRACT

This study was conducted to determine the usefulness of a general global reading test, a cloze test, and a vocabulary test as predictors of success, as well as the effects of an extended required study skills program on success and achievement, for students in mechanics programs at Keewatin Community College in Manitoba, Canada. The three criteria for success were first- and second-term grade point averages and drop-out rate. Nine correlational analyses, six one-way analyses of variance, and two chi-square analyses were used on the collected data to determine the predictive validity of each of the tests and the effect of the study skills program on student success in mechanics courses. The results of the analyses led to the following conclusions: (1) the global reading test was not useful as a predictor of success for the mechanics students; (2) the vocabulary and cloze tests were better predictors of success than the general reading test; (3) the cloze test was the better predictor of success; and (4) the required study skills program had a positive effect on student success and achievement. Recommendations were made on the use or discontinuation of these tests and the study skills program as a result of the study. (Author/KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED217191

CE

THE RELATIONSHIP OF GLOBAL, READING, VOCABULARY, AND CLOZE TESTS TO STUDENT SUCCESS AND THE EFFECT OF A STUDY SKILLS PROGRAM ON INDICES OF SUCCESS FOR VOCATIONAL STUDENTS

APPLIED EDUCATIONAL RESEARCH AND EVALUATION

by

Jacqueline Stalker, M.Ed.

Manitoba Department of Education

WINNIPEG CLUSTER

A PRACTICUM PRESENTED TO NOVA UNIVERSITY
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF EDUCATION

NOVA UNIVERSITY

FEBRUARY 1982

CE 032 680

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

J. Stalker

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

ABSTRACT

This study was conducted to determine the usefulness of a general global reading test, a cloze test, and a vocabulary test as predictors of success, as well as the effects of an extended required study skills program on success and achievement, for students in Mechanics programs at Keewatin Community College in northern Manitoba.

The three criterion measures for success were first and second term grade point averages and drop-out rate. Nine correlational analyses, six one-way analyses of variance, and two chi-square analyses were used on the collected data to determine the predictive validity of each of the particular tests and the effect of the study skills program on student success in the Heavy Duty and Motor Vehicle Mechanics courses.

The results of the analyses yielded information which led to the conclusions that: (1) the general global reading test (TRIGGS) was not useful as a predictor of success for the Mechanics students; (2) the vocabulary and cloze tests were better predictors of success than the general reading test; (3) the cloze test was the better predictor of success; and (4) the required study skills program had a positive effect on student success and achievement.

Recommendations were made for Keewatin and all Manitoba Community Colleges to: (1) discontinue use of the TRIGGS test for students in Trades and Technology; (2) use the cloze test as a predictive measure of success; (3) continue the study skills program for Mechanics students; and (4) consider implementation of study skills strategies in courses identified for review through the historical audit process.

CONTENTS

	Page
LIST OF TABLES	iv
INTRODUCTION	1
BACKGROUND AND SIGNIFICANCE	2
DEFINITION OF TERMS	9
PROCEDURES	11
RESULTS	14
DISCUSSION AND CONCLUSIONS	22
IMPLICATIONS AND RECOMMENDATIONS	24
BIBLIOGRAPHY	27

TABLES

Table		Page
1.	Analyses of Variance: The Effect of Success on the TRIGGS Pre-test Performance.	15
2.	Correlation Coefficients Between TRIGGS and Indices of Success.	15
3.	Correlation Coefficients Between the Vocabulary Test and the Cloze Test and Indices of Success.	17
4.	Analyses of Variance: The Effect of Success on Vocabulary and Cloze Pre-tests Performance	18
5.	Analyses of Variance: The Effect of Study Skills Instruction on Indices of Success in the Programs.	19
6.	Chi-Square Analyses: The Effect of Study Skills Instruction on Drop-Out Frequencies.	21

INTRODUCTION

The education of adults is a recognized and desirable aspect of life in a technological society, and in a world of increasingly rapid change. Keewatin Community College fulfills such a mandate for the residents of northern Manitoba and conforms to the basic planning principles elucidated in numerous models for program planning. Frequent formative assessment led to the identification by faculty members in the Trades and Technology department of a problem with success rates, in terms of grade point average and drop-out rate, of students in the Heavy Duty and Motor Vehicle Mechanics courses. A historical performance audit, conducted regularly for all provincial community colleges, confirmed a high drop-out rate and a less than desirable grade point average for students in these courses.

Immediate intervention strategies were implemented. Three pre-test measures were administered as possible predictors of success in the program. In addition, a three-week study skills component was incorporated in each program to reinforce the content knowledge of the students and also to encourage increased awareness of the importance of reading and study techniques for both students and instructors.

At the end of the academic year, a study was conducted to determine the usefulness of a general global reading test, a cloze test,[1] and a vocabulary test as predictors of success in the Heavy Duty Mechanics (HD) and the Motor Vehicle Mechanics (MV) courses at Keewatin Community

---

[1] Cloze is a validated procedure for measuring reading comprehension. See Bormuth, J. R., Readability: A new approach, Reading Reasearch Quarterly, 1966, 1, pp. 79-132.

College, as well as the effects of an extended, required study skills program on student success and achievement in these two programs.

Correlational analyses, analyses of variance, and chi-square analyses were used on the collected data to determine the predictive validity of each of the particular instruments and the effect of the study skill program on student success in the HD and MV courses. The three criterion measures for success were first and second term grade point averages and drop-out rate.

Although attitude toward a program and commitment to its completion are uncontrolled variables and may be major contributors to all criterion measures, the only expected consequence was that they may have reduced the observable effects of the variables examined in the study. The results of the analyses yielded information from which recommendations for program and policy decisions were made for the Trades and Technology department in Keewatin and possibly other community colleges in the province of Manitoba.

BACKGROUND AND SIGNIFICANCE

In 1966, Keewatin Community College was established to meet the educational and training needs of the adult Manitoba population living north of the 53rd parallel. Keewatin is a small rural college offering technical and occupational programs to approximately four hundred students. Its size, location and unique character reinforce the desire of faculty members and administrators to provide "equal chance of success" for all of its students.[2]

---

[2] International Commission on the Development of Education, Learning To Be, 4th Impression, (Paris: United Nations Educational, Scientific and Cultural Organization, 1972), p. 72.

The words of the UNESCO report, Learning To Be, are particularly appropriate to this group:

> Education follows the laws of every human undertaking, growing old and gathering deadwood . . . it must avoid the pitfalls of complacency and routine. It must constantly question its objectives, its content and its methods.[3]

Instructors at the college have always been encouraged to question programs and to volunteer information on how these programs might be improved. To assess the effectiveness of the Heavy Duty Mechanics and Motor Vehicle Mechanics courses, the college instructors posed questions such as "what", "how", and "why". They subsequently identified the particular problem in their courses. A perceived weakness in the students' reading ability appeared to be impeding their learning and course progression and to be abetting the attrition rate.

Assistance from the Community Colleges Division was requested to devise strategies for program improvement. The Division's specific task was to suggest and later evaluate methods and materials that could facilitate the students' mastery of course content and completion of the program. Two separate strategies were implemented for the 1980-81 entering classes.

Consultation with reading experts at the largest provincial university had clarified that reading ability draws upon three domains of skills. Students with graphophonic skill deficits would have been diverted to literacy or basic education programs. Therefore students in the HD and MV courses might have semantic, syntactic, or else no reading skill deficits.

---

[3] Learning To Be, p. 79.

A selection of tests with lower readability levels was considered but the idea was discarded on the basis that supplemental technical literature could not be monitored throughout the student's lifetime. General global vocabulary and comprehension tests were examined. The scores obtained by the Keewatin students on the generally administered global reading test (TRIGGS) seemed to bear no direct relation to the occupational reading requirements. Thus, course specific semantic and syntactic tests were constructed as the first strategy. All instructors were asked to formulate basic lists of at least one hundred words which are common to the trade and must be understood by entering students. The fundamental vocabulary lists were amalgamated, alphabetized, and defined synonymously and antonymously. Test items were selected by using a table of random numbers; word class of definitions was verified, and all other definitions formed a pool for forced choice definitions of the same word class. Subsequently, two multiple choice vocabulary tests were constructed, piloted, and revised. For the latter tests to assess syntactic skills, occupation specific cloze tests were used. Both the vocabulary and cloze tests had positive attributes. They were brief, practical, and could be administered by anyone at the College.

The second strategy was an intervention in the form of a three-week reading and study skills component for the course. The reading instructor attended occupational classes in the mornings and in the afternoons taught the students the reading related skills required for successful learning and completion of trades training. Although initially unplanned, one class received the three-week program and the other class received the three-week program plus a

regular weekly maintenance study skills class throughout the year. A consultant was hired on a contract basis to design supplementary materials for the reading instructor. Units on diagnosis, vocabulary, comprehension, listening and notetaking, study reading, graphic aids, and test taking included activities to reinforce the occupational instruction. While the materials were being written, the consultant was in close contact with College personnel, for it was considered that "having the same people engaged in both planning and implementation also contributes to commitment to achieve the objectives".[4] The consultant also incorporated Martha Maxwell's useful information on improving specific skills and involving regular faculty in skills training into this program for northern students.[5]

Tests and supplementary materials were completed by the summer of 1980. For 1980-81 entering Mechanics students, admissions procedures included taking not only the TRIGGS reading test but also the brief vocabulary and cloze tests. The reading and study skills classes began on the first day of the courses. Although faculty and student feedback was positive, no summative evaluation on the pre-test reading measures or the intervention strategy could be undertaken until course completion in the summer of 1981 when final grade point averages were available from the registrar's office.

This practicum was important for the students, the faculty, the individual college, and the Colleges Division for several reasons.

---

[4]Alan B. Knox, ed., New Directions for Continuing Education, (San Francisco: Jossey-Bass Inc., Number 6, 1980), p. 81.

[5]Martha Maxwell, Improving Student Learning Skills, (San Francisco: Jossey-Bass Inc., 1980).

The students would receive further assistance in mastering and completing their courses. The faculty would get immediate positive reinforcement for their formative evaluation activities and would, incidentally, increase their awareness of the value of reading and study techniques. Keewatin Community College might benefit from improved instructional programs. The Division, through this study, would assess the merits of specific pre-tests and the effects of a study skills program on the students' grade point averages and course completion rates and thereby might recommend certain actions for other colleges in the Province.

A review of the literature confirmed that the instructors' continuous appraisal was a paradigm of formative evaluation which adhered to the Tylerian model. Ralph W. Tyler postulated that curriculum and the instructional program are continuous processes wherein materials and procedures are developed and tried, results are appraised, inadequacies identified, and improvements are suggested. Subsequently there is replanning, redevelopment, and re-appraisal, all in a continuing cycle leading to an increasingly more effective program.[6]

Borich and Drezek stated that two questions, "how" and "why", could be posed by instructors in their continuous evaluative process. Answers to the questions would help to assess the effectiveness of particular programs and to thereby modify, delete, or create new components in order to realize the desired outcomes.[7]

---

[6]Ralph W. Tyler, Basic Principles of Curriculum and Instruction, (Chicago: University of Chicago Press, 1949), p. 123.

[7]Gary D. Borich, ed., Evaluating Educational Programs and Products, (Englewood Cliffs, N. J.: Educational Technology Publications, 1974), pp. 312-339.

Scriven, however, emphasized the necessity of asking the practical "what" questions, for these lead to practical wisdom or solutions without theories. He predicates that researchers investigate causal factors or "why" questions and thereby formulate theories. Although these theories provide new terminology, they do not "particularly provide new insight" for the behavioural sciences. Thus, he advocates asking "what" for educational research.[8]

Bloom's model of "Learning for Mastery" demonstrates that most students certainly can master a subject; the variable is the amount of time required for an individual to do so. He proposes that the educator's task is to find "the methods and materials that will enable the largest proportion of our students to attain such mastery" and furthermore to ensure that "school learning must be successful and rewarding".[9]

In their study on strategies to effect reading improvement in vocational education, Sloan and Pearson concluded that it is the intervention per se which is consequential.[10] One intervention which is gaining primacy for underprepared students is the provision of reading and study skills programs which, as stated by Martha Maxwell,

---

[8]Michael Scriven, "Educational Research: Problems - Practices - Potential", Center for Higher Education Ninth Annual Summer Institute, Nova University, Fort Lauderdale, Florida, June 22, 1981.

[9]Benjamin S. Bloom, "Learning for Mastery", in Toward Instructional Accountability, ed. John E. Roueche and Barton R. Herrscher, (Palo Alto, California: Westinghouse Learning Press, 1973), pp. 94-113.

[10]Margaret Sloan and P. David Pearson, "The Effects of Teacher Intervention Strategies on Poor Readers' Comprehension of Technical Matter in a Technical-Vocational School", The Journal of Vocational Education Research, III:1, Winter, 1978, pp. 9-19.

"have greatly expanded as the number of nontraditional students has increased".[11]

Although Scriven, Stake, and many others have written of the purpose of evaluation, Sullivan succinctly defined two major terms in the context of program evaluation.

> The product of formative evaluation activities is expected to be an improved instructional program, while the product of summative evaluation is normally a set of descriptive statements about the efficacy of a single program or the merits of two or more programs.[12]

In the Canadian Association of University Teachers monograph series, Geis points out that "evaluation can be encouraged only if the system has the capacity to provide support for change".[13]

In sum, Tyler's and Bloom's models, and Borich, Drezek, and Scriven's questions were applied by the instructors and the College. Sloan and Pearson's conclusion was utilized by the Division. The summative evaluation addressed in the practicum was feasible solely because of the valuable formative contributions of the faculty. The Manitoba Community Colleges Division had the capacity to support the change and subscribed to Bender's thesis that "shaping the curriculum is shaping the institution itself".[14] Keewatin Community College was the institution both shaping and being shaped.

---

[11] Maxwell, Improving Student Learning Skills, p. 269.

[12] H. J. Sullivan, "Improving learner achievement through evaluation by objectives", (Inglewood, California: Southwest Regional Laboratory for Educational Research and Development, 1968).

[13] If Teaching is Important...The Evaluation of Instruction in Higher Education, Canadian Association of University Teachers, a CAUT Monograph series, (Canada: Clarke, Irwin and Company Limited, 1977), p. 23.

[14] Louis W. Bender, "Administrative Strategies for Shaping the Curriculum", New Directions for Community Colleges, ed. Arthur M. Cohen (San Francisco: Jossey-Bass Inc., Number 5, 1979), p. 93.

DEFINITION OF TERMS

In this research project, terminology adheres to the following definitions:

1. Community Colleges Division

   The branch of the Department of Education in the province of Manitoba which is comprised of a Programming Directorate, an Administration and Finance Directorate, and three community colleges.

2. Drop-out

   A premature course termination; anyone leaving before the end of the course for any reason.

3. Drop-out rate

   Ratio of the number of students withdrawing from the courses to the total number of students enrolled, as expressed either in terms of frequency of students withdrawing and frequency of students completing the courses (used in the χ^2 analyses), or as expressed numerically when students who withdrew were assigned a score of 0 and students who remained were assigned a score of 1 (used in the analyses of variance).

4. Heavy Duty Mechanic

   A skilled worker who performs general repair, inspection, adjustment, and servicing to heavy duty equipment such as bulldozers, graders, front-end loaders, fork lifts, etc.

5. Historical performance audit

   A summary of course data listing name of course, student demand, enrollment/quota, attrition, unemployment rate, training related jobs, and cost per net training day.

6. Indices of success

   The three indices of success are WGP-1, WGP-2, and whether or not a student completed the course.

7. Motor Vehicle Mechanic

   A skilled worker who inspects, services, and overhauls hydraulic, mechanical and electrical parts and accessories of automobiles, buses, trucks, tractors, and other internal-combustion engine powered vehicles to keep them in proper operating condition.

8. Success

   In terms of this study success refers to whether or not the student completed the course. It is used as the independent variable in the analysis of variance with two levels: completed (score = 1) and not completed (score = 0).

9. TRIGGS

   A general global reading test comprised of three parts - general reading, vocabulary, and comprehension - published and distributed by the Committee on Diagnostic Reading Tests, Inc., Frances Oralind Triggs, Chairman, Mountain House, North Carolina.

10. Weighted grade point average (WGP)

    The product of the hours of credit for the courses and the grade points obtained by the student, divided by the total number of credit hours. WGP-1 is used to identify the weighted grade point average for first term; WGP-2 is used to identify the weighted grade point average for second term.

PROCEDURES

The three specific questions which were addressed in the analyses were as follows:

1. What is the usefulness of a general global reading test (TRIGGS), a content specific vocabulary test, and a content specific cloze test as predictors of success in either the Heavy Duty Mechanics (HD) or the Motor Vehicle Mechanics (MV) program at the Community College?
2. Is either the vocabulary test or the cloze test a better predictor of success in these Mechanics programs than the TRIGGS test?
3. What is the effect of a required study skills program on student success and course completion in these Mechanics programs?

Three criterion measures for success were defined: drop-out rate, first term weighted grade point average (WGP-1), and second term weighted grade point average (WGP-2). The data on drop-out, WGP-1, and WGP-2 were provided by the registrar of the College.

To obtain an indication of the strength of the relationship between the TRIGGS test and indices of success, and between the vocabulary and cloze tests and indices of success, correlational analyses were conducted.

One-way analyses of variance, using success as the independent variable, were employed to determine:

a) whether or not a significant difference existed on TRIGGS performance between students who withdrew from the courses and students who completed the courses,

b) whether or not a significant difference existed on the vocabulary and cloze pre-test performance between students who withdrew from the course and students who completed the courses, and

c) the effect of study skills instruction on indices of success in the programs.

Finally, chi-square analyses compared frequencies of drop-out between two groups for three different years. The 1980-81 HD and MV students were the treatment group who received a study skills program. The reference or control group were the students enrolled in HD and MV programs in the two preceding years, 1979-80 and 1978-79, when no systematic study skills program was provided. An overall chi-square analyzed the three years independently (78-79 vs 79-80 vs 80-81). Additional analyses compared the treatment group with the average frequencies for the reference groups (78-79 vs 79-80 vs 80-81). HD and MV students were analyzed on all of the analyses both together and separately. Conclusions were drawn from the entire spectra of analyses.

Research questions numbers 1 and 3 were addressed in the analyses however research question 2, because it is a comparison of correlation coefficients, did not involve a statistical analysis. For each of the two courses, HD and MV, and for the two courses collapsed, each of the following analyses were employed:

1. Correlational analyses

   a) Drop-out rate with TRIGGS scores (Research question 1)

   b) WGP-1 with TRIGGS scores (Research question 1)

   c) WGP-2 with TRIGGS scores (Research question 1)

   d) Drop-out rate with cloze scores (Research question 1)

e) WGP-1 with cloze scores (Research question 1)

f) WGP-2 with cloze scores (Research question 1)

g) Drop-out rate with vocabulary scores (Research question 1)

h) WGP-1 with vocabulary scores (Research question 1)

i) WGP-2 with vocabulary scores (Research question 1)

2. ANOVA

a) The effect of success on TRIGGS pre-test performance (Research question 1)

b) The effect of success on cloze test performance (Research question 1)

c) The effect of success on vocabulary test performance (Research question 1)

d) The effect of the study skills program on drop-out rate (Research question 3)

e) The effect of the study skills program on WGP-1 (Research question 3)

f) The effect of the study skills program on WGP-2 (Research question 3)

3. Chi-Square

a) A comparison of 1978/1979/1980 (Research question 3)

b) A comparison of 1978-79/1980 (Research question 3).

A limitation of this study was that attitude and commitment were uncontrolled variables which may well have contributed to all criterion measures and therefore may have reduced the observable effects of the variables examined within the study.

All of the collected and analyzed data pertained to vocational students in one college in northern Manitoba. As far as could be

ascertained, there were no population differences among the classes and years examined. Although no two colleges are identical, it was assumed that reading tests and study skills programs as predictors of success for vocational students have sufficient universality that other colleges may benefit from this study.

RESULTS

This section reports the results derived from the analyses for each of the three questions listed in the procedures section.

Question 1: What is the usefulness of a general global reading test (TRIGGS), a content specific vocabulary test, and a content specific cloze test as predictors of success in either the Heavy Duty Mechanics (HD) or the Motor Vehicle Mechanics (MV) program at the Community College?

The relationship of drop-out rate to performance on the TRIGGS pre-test is shown in Table 1. None of the results of the analyses of variance indicated that the TRIGGS was a significant predictor of success in either of the programs. The correlation coefficients between the TRIGGS scores and the drop-out rate indicated little, if any, relationship between performance on the TRIGGS and the student's completion or non-completion of the course. Furthermore, the analyses of variance did not indicate that students who had finished the course had a significantly higher mean score on the TRIGGS pre-test than the students who had dropped out.

TABLE 1

ANALYSES OF VARIANCE: THE EFFECT OF SUCCESS ON THE TRIGGS PRE-TEST PERFORMANCE

	F-value	p-value
Both	0.040	.8414
Motor Vehicle	0.133	.7176
Heavy Duty	0.221	.6415

The correlational analysis of the relationship between performance and grade point average during either of the two terms yielded no significant coefficients, as shown in Table 2. One correlation, that between the TRIGGS score and the first term weighted grade point average ($r = .2569$, $p = .149$), indicated that there is a weak relationship between the two scores; this relationship did not reach established significance levels and was not maintained for the second term grade point average.

TABLE 2

CORRELATION COEFFICIENTS BETWEEN TRIGGS AND INDICES OF SUCCESS

	TRIGGS (r)	p-value
Drop-Out Rate		
Both	-.0244	.841
Motor Vehicle	-.0654	.718
Heavy Duty	-.0791	.641

Table 2 (Cont'd.)

	TRIGGS (r)	p-value
WGP-1		
Both	.1158	.340
Motor Vehicle	.2569	.149
Heavy Duty	-.0832	.624
WGP-2		
Both	.0016	.990
Motor Vehicle	.0723	.689
Heavy Duty	.0045	.979

Question 2: Is either the vocabulary test or the cloze test a better predictor of success in these Mechanics programs than the TRIGGS test?

A significant correlation coefficient was found between the cloze test performance and the drop-out rate when both HD and MV programs were considered together ($r = .2543$, $p = .034$). No significant relationship between vocabulary performance and grade point average for either term was indicated by the analyses. A significant relationship was indicated, however, between the cloze test performance and the first term grade point average ($r = .2518$, $p = .035$) and the second term grade point average ($r = .2964$, $p = .013$). When MV students were analyzed as a separate group, the results indicated an extremely high positive relationship between cloze test performance and second term grade point

average (r = .4722, p - .006). These data are shown in Table 3.

TABLE 3

CORRELATION COEFFICIENTS BETWEEN THE VOCABULARY TEST AND THE CLOZE TEST, AND INDICES OF SUCCESS

Indices	Vocabulary		Cloze	
	r	p-value	r	p-value
Drop-Out Rates				
Both	.2510	.036*	.2543	.034*
Motor Vehicle	.3205	.069	.3197	.070
Heavy Duty	.2370	.158	.2296	.172
WGP-1				
Both	.1504	.214	.2518	.035*
Motor Vehicle	.1013	.575	.2469	.166
Heavy Duty	.2577	.131	.2718	.104
WGP-2				
Both	.1370	.258	.2964	.013*
Motor Vehicle	.1978	.270	.4722	.006**
Heavy Duty	.0995	.558	.1435	.397

*: $p < .05$

**: $p < .01$

The relationship between the vocabulary test and drop-out rate was further indicated by a significant F-ratio on the analysis of variance (F = 4.571, p = .0361). As well, the analysis of variance indicated a significant difference between the cloze test performance of students who did drop out of the program and those who did not (F = 4.700, p = .0337). These data are shown in Table 4.

TABLE 4

ANALYSES OF VARIANCE: THE EFFECT OF SUCCESS ON VOCABULARY AND CLOZE PRE-TESTS PERFORMANCE

	Vocabulary		Cloze	
	F-value	p-value	F-value	p-value
Drop-Out Rate				
Both	4.571	.0361*	4.700	.0337*
Motor Vehicle	3.550	.0690	3.530	.0697
Heavy Duty	2.084	.1578	1.948	.1716

*: $p < .05$

Question 3: What is the effect of a required study skills program on student success and course completion in these Mechanics programs?

In the analyses of variance for drop-out rate, a significant overall main effect was shown ($F = 4.480$, $p = .0149$), in that there was a significantly lower drop-out rate for the treatment or study skills group than for the reference or control groups. Further analyses indicated that this effect was evident for Motor Vehicle Mechanics students ($F = 3.750$, $p = .0352$) but not for Heavy Duty Mechanics students.

No significant differences were found between the treatment and the reference groups on the first term weighted grade point average. By the second term, however, there was a significant difference in favour of the students taking the study skills program when students from both programs were considered together ($F = 3.181$, $p = .0479$). When HD and MV programs were analyzed individually, the significant

effect of the study skills instruction was evident for the Motor Vehicle Mechanics students (F = 3.272, p = .500) but not for the Heavy Duty Mechanics students. These data are shown in Table 5.

TABLE 5

ANALYSES OF VARIANCE: THE EFFECT OF STUDY SKILLS INSTRUCTION ON INDICES OF SUCCESS IN THE PROGRAMS

Measures of Success	F-value	p-value
Drop-out Rate		
Both	4.480	.0149*
Motor Vehicle	3.750	.0352*
Heavy Duty	2.114	.1363
WGP-1		
Both	1.423	.2482
Motor Vehicle	1.082	.3518
Heavy Duty	2.668	.0839
WGP-2		
Both	3.181	.0479*
Motor Vehicle	3.272	.0500*
Heavy Duty	1.031	.3674

*: $p < .05$

Because drop-out rate is an interval rather than a continuous variable like grade point average, chi-square analyses, as shown in Table 6, seemed particularly appropriate for the assessment of drop-out frequencies in relationship to the study skills program. This analysis, therefore, was done in an attempt to further elucidate the results of the analyses of variance.

The chi-square analyses confirmed the results observed in the analyses of variance. A highly significant overall effect ($\chi^2 = 10.078$, $p < .01$) was found in favour of the treatment group when students from both programs were considered together over the three years. When the two reference groups (1978-79 and 1979-80) were combined into one reference group to directly examine the effect of study skills on drop-out frequencies, a highly significant effect ($\chi^2 = 8.192$, $p < .01$) in favour of the treatment group was observed. When the two programs were analyzed separately, over the three years a significant overall effect was found in favour of the treatment group for the Motor Vehicle Mechanics (MV) students ($\chi^2 = 9.179$, $p < .05$). A highly significant effect in favour of the study skills instruction group was revealed when the reference and treatment groups were compared to each other on frequency of drop-out ($\chi^2 = 11.455$, $p < .001$). No significant effect for the study skills instruction, however, was observable for students in the Heavy Duty Mechanics (HD) program.

TABLE 6

CHI-SQUARE ANALYSES: THE EFFECT OF STUDY SKILLS INSTRUCTION ON DROP-OUT FREQUENCIES

Program	1978-79	1979-80	Total (reference)	1980-81	Overall χ^2	p-value
Motor Vehicle	11	11	22	11	9.179	$p < .05$*
Completed course	5	1	6	8	11.455[1]	$p < .001$**
Dropped out	6	10	16	3		
Heavy Duty	13	12	25	12	4.112	
Completed course	12	9	21	12	2.286[1]	
Dropped out	1	3	4	0		
Total	24	23	47	23	10.078	$p < .01$**
Completed course	17	10	27	20	8.192[1]	$p < .01$**
Dropped out	7	13	20	3		

*: $p < .05$

**: $p < .01$

[1]: 2-way comparison

DISCUSSION AND CONCLUSIONS

Data presented in the results section were collected in an attempt to assess which of three pre-test measures were the most appropriate predictors of success in either or both of the Mechanics programs at Keewatin Community College. The results would lead to the conclusion that the scores on the TRIGGS test are not a valid predictor of whether or not a student will complete either of the programs. Factors other than reading ability as measured by a standardized test such as the TRIGGS may affect the student drop-out rate. In addition, there appeared to be no relationship between scores on the TRIGGS test and subsequent grade point averages. Hence, it seems evident that performance on the TRIGGS is a poor predictor of success in either the HD or MV programs, irrespective of how success is measured: by drop-out rate or by grade point average. This finding might be extrapolated to other vocational programs in community colleges, however, further research would be required.

The data also demonstrate that, although neither the vocabulary test nor the cloze test seemed to be an excellent predictor of success in the Mechanics programs, both were superior to the TRIGGS test in predicting success as measured by either drop-out rate or grade point average. The vocabulary test seemed to predict drop-out better than it predicted grade point average, while the cloze test seemed to be a significant predictor of both drop-out rate and grade point average. In addition, both measures appeared to be better predictors when both the HD and MV programs were considered together than when either program, and especially HD, was considered alone. The conclusion reached as a

result of the analyses was that the vocabulary and cloze tests, although weak predictors, are more useful than the TRIGGS scores, and that the cloze test is the best predictor of success. It might be inferred that other factors, such as attitude, have greater effect on success in the programs than those accounted for by any of the pre-test measures. It is furthermore unlikely, because of the weak relationship between pre-test scores and success, that any of the three measures alone is appropriate as a screening device.

Two different analyses were employed to assess the effectiveness of the required study skills program on the success of students in the Mechanics programs. The results of the analyses of variance might lead to an erroneous conclusion that the study skills instruction was effective in aiding the progress of Motor Vehicle Mechanics students but not of Heavy Duty Mechanics students. Analyzed separately, significant effects were not observable for the HD students on any of the measures of success. Clear effects, however, were observed as a result of the study skills program on MV students as measured by drop-out rate, drop-out frequency, and second term grade point average. Factors such as scope and length of study skills instruction plus attitude and commitment of the students can all be salient in affecting progress of students in both programs. It seems possible that the Motor Vehicle students may have been the lesser motivated group and that the study skills support system and maintenance classes throughout the year may therefore have had a significant effect on them. The Heavy Duty Mechanics students may have been highly motivated to begin with, and the three weeks of study skills instruction did not yield as dramatic an effect. It is also possible that the reading and study skills program was more effective for the MV

students because their texts may have had a high readability level and, therefore, the students' need for these skills might have been more immediate. The HD students might not have been confronted with texts which had exceptionally high readability levels. In any case, it would seem apparent that motivational, attitudinal or other factors could have mediated the effect of the study skills program on either group. Whether the effect of the instruction was mediated or not, it is apparent, nonetheless, that a required instructional program in reading and study skills can significantly affect performance of all students considered together, and particularly of Motor Vehicle Mechanics students considered in isolation.

In summary, the original three questions led to the following conclusions: (1) the TRIGGS test is not useful as a predictor of success in the Heavy Duty Mechanics and Motor Vehicle Mechanics programs in Keewatin Community College. (2) The vocabulary and cloze tests are better predictors of success than the TRIGGS, but they are still weak predictive measures. Of the three tests, the cloze was the best predictor of success, as measured by grade point average and by drop-out rate, for students in the HD and MV Mechanics programs. (3) There was a positive effect of a required study skills program on student success and achievement.

IMPLICATIONS AND RECOMMENDATIONS

When specific questions are addressed, there is always the possibility of an exponential increase in the number of questions raised. Such was the case in this research project. It would be educationally beneficial if further research were conducted on such topics as:

- the significance of other standardized reading tests as predictors of success in specific programs,
- the correlation between general global reading scores and student success in liberal arts programs,
- the influence of other intervention strategies on student success in vocational programs,
- a comparison of general versus subject specific study skills programs and their subsequent effect on indices of success,
- the validity of standardized tests which are used to screen students,
- the continuing effect of a study skills program on students' progress,
- the relationship between enhanced reading skills and pursuit of continuing education, and
- any aspect related to the instructional provision of skills which facilitate further learning.

John Gardner's words on excellence and the ideal of individual fulfillment synthesize this requisite need for further research.

> Schools and colleges...must equip the individual for a never-ending process of learning; they must gird his mind and spirit for the constant reshaping and re-examination of himself. They cannot content themselves with the time - honored process of stuffing students like sausages or even the possibly more acceptable process of training them like seals. It is the sacred obligation of the schools and colleges to instill in their students the attitudes toward growth and learning and creativity which in turn shape the society.[15]

---

[15] John. W. Gardner, Excellence, (New York: Harper & Row, Publishers, 1961), p. 171.

The following recommendations are made for implementation by Keewatin Community College and for consideration by other community colleges and educators.

It is recommended that:

1. The use of the TRIGGS test for students in the trades and technology area be discontinued;
2. Until a better predictive instrument is developed, the cloze test alone or both the vocabulary and the cloze tests be used as pre-test measures of success in the Heavy Duty and Motor Vehicle Mechanics programs;
3. The extended required study skills instruction for Heavy Duty and Motor Vehicle Mechanics students be continued;
4. Further data be collected in order to monitor and further assess the effect of the study skills program on Heavy Duty Mechanics students; and
5. Other Manitoba community colleges consider the implementation of study skills strategies in courses identified for review through the historical audit process.